

**ABSTRACT OF THE DISCLOSURE**

A method of reducing aluminum fluoride deposits in a plasma etch reactor.

The deposits can be reduced during a cleaning step wherein the cleaning gas includes  $\text{BCl}_3$  energized into a plasma such that dissociated and undissociated  $\text{BCl}_3$  are formed and the undissociated  $\text{BCl}_3$  reacts with aluminum fluoride deposits and forms volatile products which are removed from the chamber. The introduction of  $\text{Cl}_2$  into the cleaning gas allows control of the degree of  $\text{BCl}_3$  dissociation. The deposits can also be reduced during etching of an aluminum layer by controlling the amount of fluorocarbon used in the main etch and adding  $\text{BCl}_3$  during the overetch. The cleaning step may be performed without a substrate in the chamber and may be followed by a conditioning step.